

Implicit Statistical Learning Facilitates Second Language Acquisition in Adult Learners

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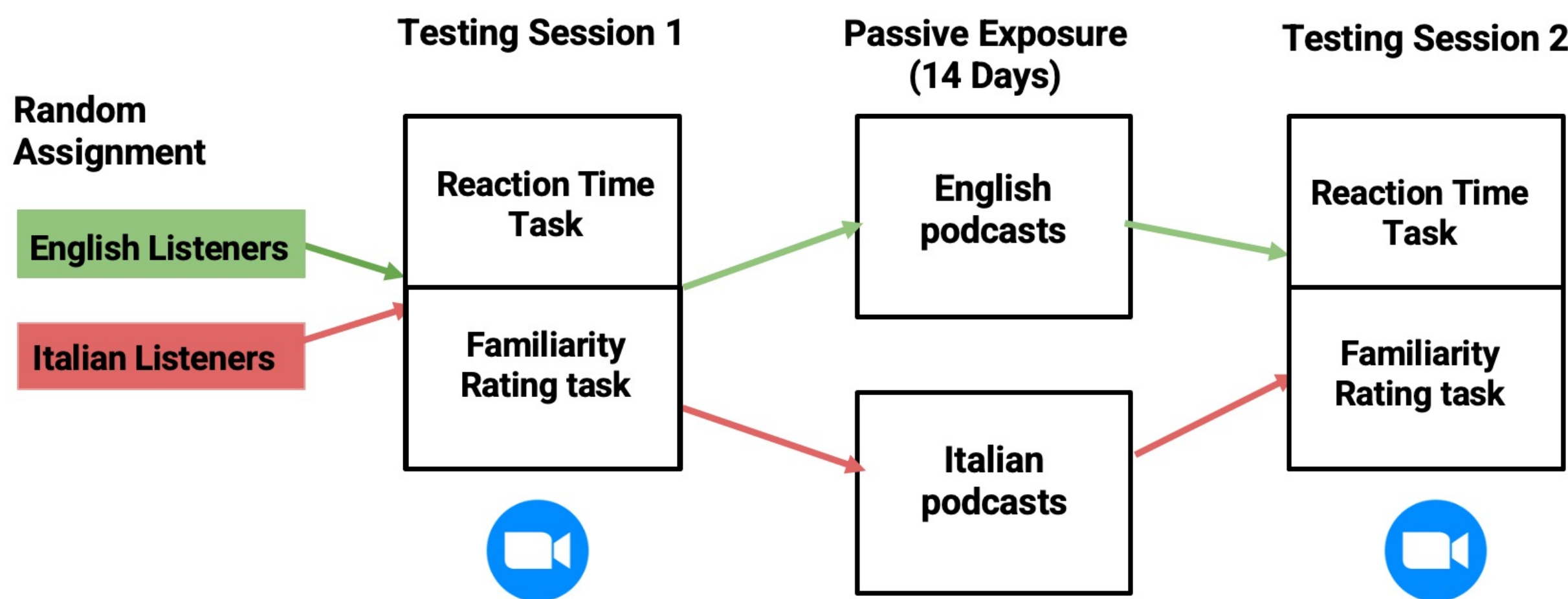
Background

- Statistical learning involves picking up on regularities within the environment.
- Humans are capable of harnessing statistical learning to facilitate aspects of language acquisition by picking up on differing transitional probabilities between syllable pairs (Pelucchi et al., 2009; Romgerg & Saffran, 2010; Saffran et al., 1996a).
- Both children and adults have approximately the same capacity for auditory statistical learning, which can be harnessed while actively or passively listening to sound stimuli (Romgerg & Saffran, 2010; Saffran et al., 1997).
- Most of the research conducted thus far on statistical learning and language acquisition has employed artificial language stimuli (Saffran et al., 1996a; Saffran et al., 1996b; Saffran et al., 1997; Siegelman et al., 2018).
- The research that has been done using natural language stimuli has limited generalizability due to the use of highly miniaturized stimulus sets and experimental acoustic manipulations (Kittleston et al., 2010; Pelucchi et al., 2009; Plante et al., 2015).
- Currently it is unclear if humans can harness statistical learning to facilitate language acquisition in a fully natural language situation.

Research Goal and Hypothesis

The primary goal : Investigate if adults can leverage statistical learning to aid in second language acquisition of a natural language.

Hypothesis : Two weeks of passive exposure to Italian will facilitate statistical learning in native English-speaking adults as measured by improved reaction times to target Italian words and improved discrimination of real Italian versus foil Italian words.



Methodology

Reaction Time Task

- Target Word**
Reaction Time Word
- Il piccolo **bassotto** sembra una salsiccia
 - Il **ragazzo** vuole fare il tassista da grande
 - Indossava un **papillon** al matrimonio di sua sorella.
 - È andato in **galera** per aver ucciso una **balena** in natura.
 - Il nonno ha perso il **papillon** nel cassetto

10 Target Words - 250 Target Word sentences
5 Reaction Time Words - 50 Reaction Time Word sentences
Participants performed a button press when RTWs were heard

Familiarity Rating Task

- 1-4 familiarity rating**
- Bassotto** (target word)
 - Passero** (non-target word)
 - Batoncia** (foil word)

Participants were presented with 30 words – 10 from each category – and rated their familiarity with each word on a scale from 1-4, with 4 being most familiar

Podcast

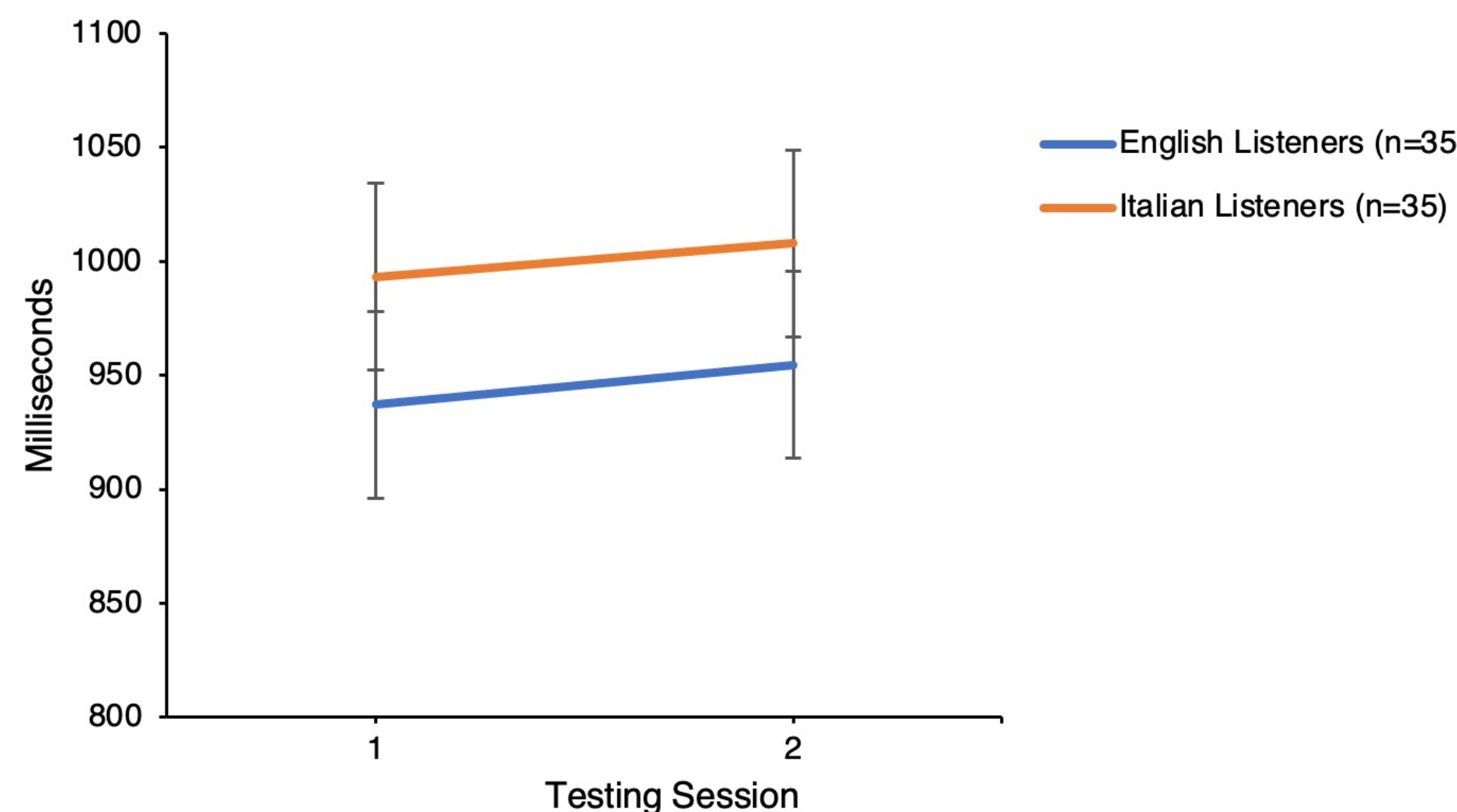
14 one-hour English podcasts and 14 one-hour Italian podcasts. Participants listened to podcasts passively. Podcasts had secret words embedded within them that participants had to recognize (compliance measure)

Questionnaires

Demographic questionnaire (administered pretest)
Subjective learning questionnaire (administered posttest)

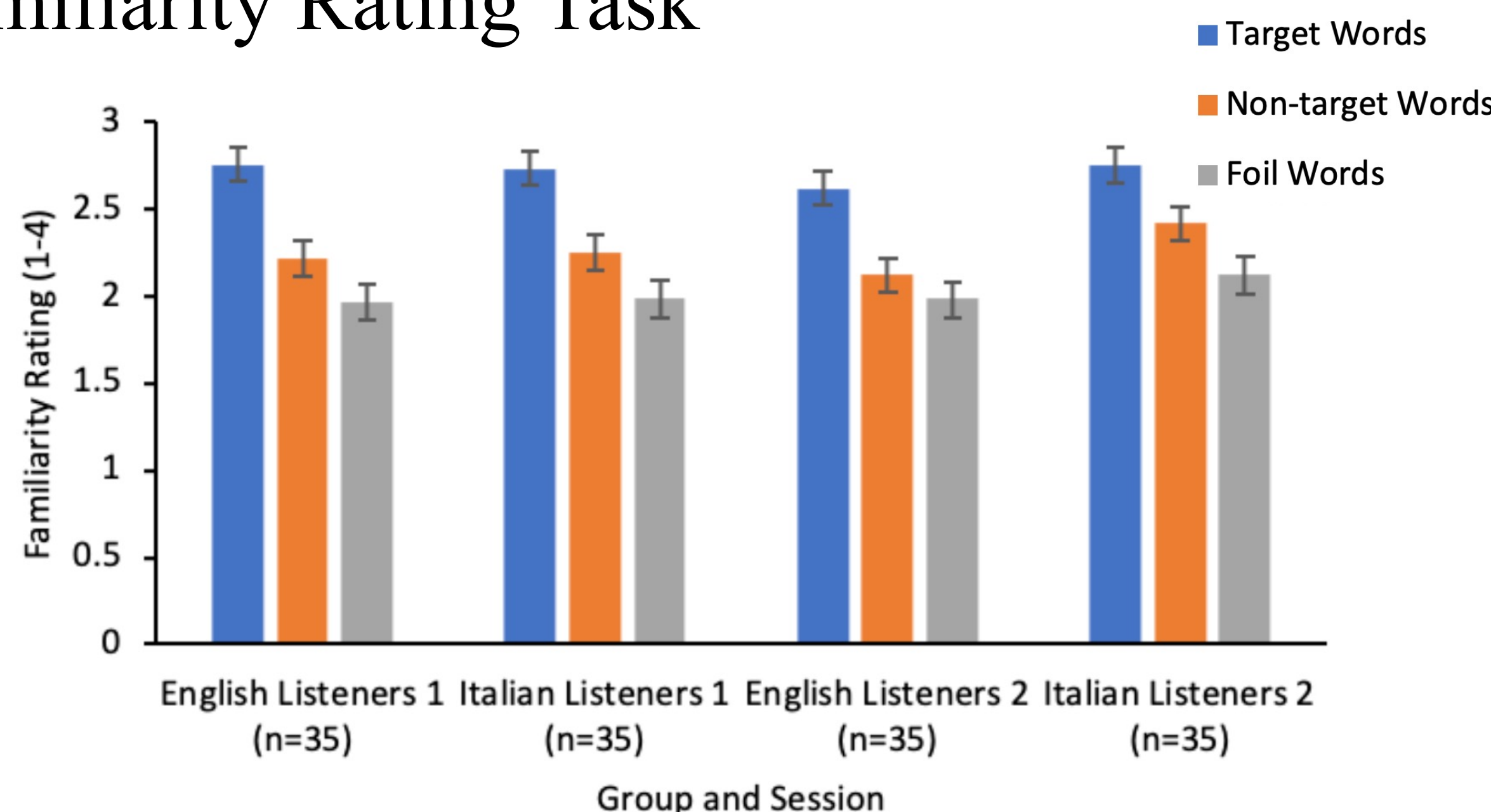
Results

Reaction Time Task



Passive exposure to Italian did not improve participants ability to react to Italian words within running speech.

Familiarity Rating Task



Brief exposure to Italian facilitated successful discrimination of familiar vs non-familiar and foil Italian words in all participants. Prolonged passive exposure did not improve participants ability to discriminate between different word types to the required level of significance.

Conclusion

Overall, prolonged passive exposure to Italian did not improve participants knowledge of Italian via statistical learning mechanism to a point that reached significance. However, brief exposure to Italian did facilitate successful discrimination of familiar versus unfamiliar Italian words. These findings provide insight on the efficacy of methods that may be used for facilitating language acquisition.